

6. (Once Amended) A magnetic encoder comprising the magnetic sensor according to [any one of claims] claim 1 [to] , 4 or 2.

10. (Once Amended) A magnetic head according to [any one of claims] claim 7 [to 9] or 8, wherein
the member of high permeability is a shield layer formed, spaced from the ferromagnetic tunnel junction element.

11. (Once Amended) A magnetic head according to [any one of claims] claim 7 [to 10] or 8, wherein
the thickness of the barrier layer near the edge of the fixed layer is larger than a thickness of the barrier layer near a central part of the fixed layer.

12. (Once Amended) A magnetic head according to [any one of claims] claim 7 [to 11] or 8, wherein
the free layer is formed wider in a region spaced from the signal detection surface.

13. (Once Amended) A magnetic head according to [any one of claims] claim 7 [to 12] or 8, wherein
the fixed layer is not exposed to the signal detection surface.

14. (Once Amended) A magnetic head according to [any one of claims] claim 7 [to 13] or 8, wherein
the member of high permeability is grounded.

Ad
15. (Once Amended) A magnetic head according to [any one of claims] claim 7 [to 14] or 8, wherein
the free layer in a region which is not opposed to the fixed layer is bent away from the fixed layer.

16. (Once Amended) A magnetic head according to [any one of claims] claim 7 [to 15] or 8, wherein
the ferromagnetic tunnel junction element further includes another fixed layer which is opposed to the free layer through another barrier layer formed on the other surface of the free layer, a magnetic direction of said another fixed layer being fixed by another antiferromagnetic layer which is adjacent thereto.

Sub 4
17. (Once Amended) A hard disk device comprising the magnetic head according to [any one of claim 5 and claims] claim 7 [to 16] or 8.